

may be obtained by combining the formulæ for  $a$ ,  $b$ , and  $c$  separately, as the complete expression contains the products of  $a$ ,  $b$ , and  $c$  as well as their squares. The following example shows this (it must be remembered that the above expressions are to be multiplied by  $\sin 1''$  if  $a$ ,  $b$ , and  $c$  are given in seconds of arc) :

$$\begin{aligned} a &= +112'', \quad b = +25'', \quad c = +30'' \\ \phi &= +25^\circ, \quad \delta = +35^\circ, \quad z = 10^\circ. \\ \text{Correction for } c \text{ alone} &= -0.00153 \\ \text{'' '' } a \text{ ''} &= -0.00584 \\ \text{'' '' } b \text{ ''} &= -0.00077 \end{aligned}$$

whereas correction for  $a$ ,  $b$ , and  $c$  all occurring together  $= +0''.0228$ , which is three times as great and of opposite sign to the sum of the three corrections taken separately. It must also be remembered that  $a$ ,  $b$ , and  $c$  are considered in this formula as being positive when they all tend to make the transit of a south star occur too early.

*Taiping, Perak: April 1899.*

*Small Nebulæ discovered with the Crossley Reflector of the Lick Observatory.* By James E. Keeler, D.Sc., Director.

The following small nebulæ were found on two plates exposed with the Crossley reflector, for three and four hours respectively, for the purpose of photographing the spiral nebulæ  $M\ 51$  in *Canes Venatici*. Assuming the position of the nucleus of the great spiral to be R.A.  $= 13^h\ 25^m\ 39^s$ , Decl.  $= +47^\circ\ 42'.6$ , as given by Roberts, the positions of the small nebulæ for 1900 are as below :

No.	R.A. h m s	Decl. ° ' "	Description.
1	13 23 02	+47 23.3	Round; diam. = 0'.2.
2	24 17	26.5	Spindle-shaped; length = 1'.9.
3	26 05	49.7	Very narrow; length = 0'.6.
4	26 14	45.5	Round; diam. = 0'.2; central condensation.
5	27 07	41.6	Round, diffuse; diam. = 0'.3.
6	27 19	18.3	Round; diam. = 0'.15.
7	27 33	19.8	Slightly elongated; major axis = 0'.2.

No. 2 is long and narrow, with a bright, somewhat irregular axis. No. 3 and No. 4 are close to the great spiral, but apparently not connected with it. The former is recognisable on

the plate in Roberts's collection of photographs, though it is confused with the strongly granular background.

Although these nebulae are quite conspicuous on the photographs, I found, on examining them with the 36-inch refractor, that all but the brightest are nearly at the limit of visibility with that instrument. Several other faint nebulae, the positions of which were not noted, were observed during the search. In fact, this region seems to be filled with small, apparently unconnected nebulae, large numbers of which would doubtless be revealed by long-exposure photographs.

The plates used with the Crossley reflector measure  $3\frac{1}{4} \times 4\frac{1}{4}$  inches, giving a field of only about one degree.

---

*Note on the Nebula N.G.C. 6535 (R.A.  $17^h 59^m$ . N.P.D.  $90^\circ 18'$ ).  
By W. H. Robinson.*

*(Communicated by the Radcliffe Observer.)*

This object was picked up with the Barclay Equatorial on May 3,  $14^h$ , when it was fairly conspicuous and about  $2'$  in diameter. It was also carefully observed with powers 45, 100, and 180 on May 5,  $13^h$ , when "the nebula was rather bright near its centre, with several small stars on the preceding side. The diameter of the nebula was  $90''$  approximately."

Immediately after my first observation, I identified it in Dr. Dreyer's most useful work, "New General Catalogue of Nebulae, &c.," and was surprised to find the following description in the column "Summary Description"—viz., "pF, vS," &c., or *pretty faint* and *very small*, &c.

The introduction of the above catalogue contains, p. 12, a progressive scale adopted in Dreyer's work, where *very small* corresponds to  $10''$  to  $12''$  diameter, and *pretty large* or *considerably large* would correspond with my estimations.

The nebula was discovered by Hind in 1852, who remarked that it was "*a nebulous object which does not occur in any of the Catalogues of Nebulae hitherto consulted. . . . It is very small and rather faint, perhaps  $1'$  in diameter . . .*" (*Monthly Notices*, xii. 208).

Although Hind described the nebula as "*very small*," his qualifying note, "*perhaps  $1'$  in diameter*," would place the object with *pretty large* nebulae on Dreyer's scale.

On looking up the other reference given by Dreyer—viz. Auwers 38—I found, *Königsberger Beob.* vol. xxxiv. p. 227, Auwers's heliometer observation gave  $2'$  as the diameter of this nebula. This agrees very closely with the Barclay equatorial observation on 1899 May 3.

I would suggest that the nebula be described as pL instead of vS.

*Radcliffe Observatory, Oxford:*  
1899 June 6.